18 April 1973

MEMORANDUM FOR: IRAC Working Group

SUBJECT:

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COINS, IRAC Working Group Report

Attached is a copy of subject study which was forwarded to the IRAC members by the Director of Central Intelligence (DCI) on 16 April 1973. There is also included copies of correspondence on this material by the

Assistant Secretary of Defense (I	ntelligence) and the DCI.	
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	Executive Secretary (Acting)	
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COINS

REPORT

1 February 1973

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COINS FINAL REPORT

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SUMMARY

This report covers the activities of COINS Review Group, from October 1972 to February 1973. Tasked by the ASD (I) under the auspices of the IRAC, the Group examined the broad issue of automated intelligence information exchange, and evaluated the COINS experiment as a viable means toward promoting such exchange.

The major study conclusions are generally positive:

- 1. There is a present need for automated information exchange among members of the intelligence community, and this need will rapidly increase in the future with the advent of operational systems capable of delivering data in near real-time.
- 2. The COINS system has demonstrated the feasibility of online data base exchange.
- 3. As presently configured, COINS has enhanced the effectiveness of intelligence analysts, resulting in overall manpower savings, and relieving burdens on certain communication facilities.
- 4. The benefits of COINS have been achieved in a highly cost-effective manner, utilizing existing hardware and software.

Several notable weaknesses in the COINS configuration have been revealed.

- 1. COINS executive support is not presently at a high enough level to deal effectively with the problem of coordinating diverse intelligence agencies.
- 2. The files accessible through COINS are not an optimum set of existing files.
- 3. The system operates at the SI security level and suffers from the exclusion of vital TK data.
 - 4. COINS is not interactive.
- 5. The present COINS configuration is growth-limited with respect to files which may be accessed and speed with which access may be achieved.

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Based on the above conclusions and problem highlights, the following recommendations are made:

- 1. The ASD(I) be appointed COINS executive agent, under the auspices of the DCI.
- 2. The COINS Project Office be placed under the direction of the executive agent, and be staffed by representatives of the entire community.
- 3. COINS funding be continued, under the following stipulations:
 - a. The present system be upgraded to the TK level.
- b. COINS be purged of unused files and these files replaced by the files of interest to the community, as identified in this study.
- c. COINS management reporting be strengthened to allow evaluation of usage, timeliness, and effectiveness.
- d. The COINS PMD submit a detailed plan for an upgraded system which will address the weaknesses previously identified in a cost-effective manner.

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FINAL REPORT
of the
COINS REVIEW GROUP
1 February 1973

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I. INTRODUCTION

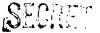
The COINS Review Group was established under the general auspices of the Intelligence Resources Advisory Committee to review and evaluate the COINS system as a means for automated information exchange among intelligence agencies in the Washington area. This report is the result of the review, performed between November 6, 1972 and February 1, 1973.

Members of the Review Group were:

Department of State	Mr. Brewer J. Merriam Director, Office of Current Intelligence Bureau of Intelligence & Research	
	Mr. William P. Deary Deputy Director, Office of Current Intelligence Bureau of Intelligence & Research	
CIA		.25X1
Office, DCI	M/Gen Robert Taylor III Chairman, Information Handling Committee	25X1
	Chief of IHC Support Committee	20/(1
NSA		25X1

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DIA		
OASD(I), Chairman	Dr. Myron S. Malkin Deputy Assistant Secretary of Defense (Technical Evaluation)	
Members of the Working	g Group were:	
Department of State	Mr. Don Stigers Mr. Julian Adler	
CIA		25X ²
NSA		±
DIA		•
OASD (I), Chairman	Mr. Norman Solat Assistant for Science & Technology ODASD(SE)	J ;



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II. OBJECTIVES

The objectives of the Review Group are best stated in the context of the objectives of the COINS experiment itself, with particular reference to the background and the history which led to the experiment. Briefly, the origins of COINS stem from a review of the operation of the Washington area intelligence community performed in 1965 by the President's Foreign Intelligence Advisory Board. The PFIAB informed the President that community progress in applying information science and technology was unsatisfactory and stated: "Unless strong and immediate actions are undertaken in this area, there is danger that the efficiency of the production and dissemination of intelligence within the intelligence community will decline progressively, and that the already high costs involved will climb so steeply as to jeopardize rational support of the broad intelligence effort".

Three actions were recommended, the second of which led eventually to what is now called COINS. This was that the NSA Technical Information Processing System (TIPS) project be expanded to include participation by other member agencies of the intelligence community in an experiment as a first step toward interagency information handling. The President approved the recommendations and directed the DCI to undertake the responsibility for implementing them.

In July 1967 the PFIAB reported to the President that although the community had made noteworthy strides in information handling, the problem was not being addressed adequately on a concerted community-wide basis, and made several recommendations for a phased implementation of a community-wide information handling system. By May 1968 the COINS experiment was more clearly defined and an Evaluation Panel was to be established by the IHC to evaluate the experiment as soon after July 1969 as was practical. Due to the continuously fluctuating nature of the COINS system, that evaluation was not performed.

In September 1972, in response to an NSA proposal to proceed with the development of a COINS II system, the ASD (I) suggested that a group not presently charged with implementation of the system review the broad question of information exchange under the general auspices of IRAC. Consequently, the COINS Review Group was formed. The Group was charged in its Terms of Reference (Appendix I) with the following objectives:

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1. To review and evaluate the COINS system, determining its effectiveness in meeting the present and anticipated requirements of the user community.

In this context, due to difficulties in arriving at a precise operational definition of COINS, the Review Group found it advisable to expand the objective to allow

- a. Evaluation of the broad requirement for automated information exchange.
- b. Evaluation of the ability of COINS, as presently constituted, to satisfy that requirement.
- 2. To identify those areas where the effectiveness of COINS in improving the intelligence product may be enhanced.
- 3. To recommend courses of action and consider their impact on present and future budget allocations.

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III. METHODOLOGY

The Review Group, formed in late October 1972, was comprised of representatives of the DCI, the national agencies involved in automated intelligence information handling (NSA, CIA, and the Department of State), DIA as the DOD intelligence producer, a major COINS participant, and representative of the services and U. S. Commands, and chaired by the ASD (I) representative.

Sitting in regular sessions at approximate intervals of two weeks, the Review Group established detailed Terms of Reference, and outlined a phased program of activities which would permit the fulfillment of the objectives within the allotted time. A continuing Working Group was formed with representation from each of the above organizations, and chaired by an ASD (I) representative. This latter group was augmented, as required, with additional personnel possessing needed substantive expertise. The Working Group was responsible for the performance of the study tasks and the maintenance of the schedule.

The Review Group was briefed at various times on subjects of interest (e.g., description of COINS, evaluation efforts, and the problems of computer security). As constituted, the Group was able to foster a significant interagency dialogue covering each of the major issues.

The severe time constraints for the study effort imposed certain limitations on the ability to generate new information. Therefore, the Working Group made maximum use of existing data, reports, and statistics, and whatever on-going work was available. However, for analysis of the total community file structure, it proved necessary to develop information which did not exist previously. The Working Group solicited and obtained descriptive material from each agency regarding all pertinent files, whether or not presently classified as a COINS file. The compilation of file information, together with agency expressions of interest and data regarding use, represents a significant contribution of previously unavailable information which was used to derive some of the major conclusions and recommendations of this report. This compilation is included in Attachment A.

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IV. RESULTS

A summary of the information gathered during the course of the study is presented as Attachment A, and briefly commented on in this section.

The results cover two general topics:

- A. System Descriptions current system and alternatives, including advantages, disadvantages, limitations, and costs.
- B. Files summary of the data on Washington area files, including COINS and non-COINS files, with comments regarding use and interest.

A. System Descriptions

1. Current System

COINS is a tenant system (i.e., COINS hardware and software reside in other systems) comprised of three principal elements:

The principal advantages of the configuration are that it has proved to be cost effective, and is now operational, with analysts being familiar with its use.

The configuration is limited, however, by the fact it operates at a single security level (TS/SI) thereby limiting the information available to users. Additionally, massive files, such as AEGIS, (a CIA textual file) cannot be accommodated.

A summary of the pro-rata and unique cost (FY 73) for all agencies for COINS is contained in the following table. Complete cost breakdowns are contained in Appendix II.

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- 2. <u>Alternative Configurations</u> Four broad categories were considered.
 - a. Maintain the present configuration and upgrade the system security level.
 - b. Eliminate COINS and satisfy existing and future interagency exchange requirements either through bilateral, direct terminal access arrangements, or by reverting to off-line only exchange.
 - c. Upgrade COINS to eliminate major weaknesses.
 - d. Replace COINS with central information storage and retrieval system.

Alternative 1 - Change COINS Security "Umbrella"

There are three sub-alternatives presented in Attachment A: (a) upgrade to TK, (b) upgrade to TK and Gamma, and (c) upgrade to complete multi-level security. This summary discusses only the first. The system itself would remain as previously, but the "umbrella" under which COINS operates would be changed from SI to SI/TK. All terminal areas would be physically secured to meet TK requirements.

The principal advantage of this modification lies in the immediate availability of TK data through a purely administrative mechanism. A disadvantage is in the additional requirement for people cleared to the TK level.

The cost for the conversion has been estimated to be between

Alternative 2 - Eliminate COINS

(a) Revert to Off-Line Exchange.

The only justification for this alternative would be an overriding need to realize whatever resource savings might be achieved
from outright abolishment of COINS. The maximum theoretical savings
achievable would amount to ______ That saving would be reduced
by the amount of resources necessarily rededicated to the production
of hard copy reports and the reinstitution of electrical summaries.

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The disadvantages of this option include the loss of a proven asset and the retrograde re-substitution of less efficient methods of information exchange.

(b) Exchange information through direct terminal/system connections.

The advantages of this option lie in the simplicity of the access. The major disadvantage lies in the fact that costs will grow geometrically with the addition of new agencies or processors. The total annual cost for institution of this option is estimated per year.

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Alternative 3 - Upgrade COINS to eliminate major weaknesses.

The principal advantages of concepts are that each agency would maintain autonomy, the switch would be eliminated, and all current hardware and software remain useable. The major disadvantage is that multiple retrieval languages remain necessary. The cost of implementing an ARPA type system is estimated to be approximately

Alternative 4 - Central Community Information Storage and Retrieval System. .

In this configuration, a single centralized processor is used to access all community files. Each user accesses the files through an encrypted link.

Advantages of the approach include commonality of retrieval and file maintenance languages. Data standards become mandatory, easing interagency liaison problems, and facilitiating growth capabilities.

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The principal disadvantage is that the size and the design of the system would render it difficult to change.

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B. Files

One of the principal tasks of the Review Group was the collection, identification, and cataloging of file information, and the analysis of the Washington area files for indications as to their content and the reactions of the community to their interchange. These reactions were expressed through statistics of the community use of files presently available through COINS, and through user agency expressions of interest in on-line access to other agency files.

A description of all files was presented for analysis by each agency. Information contained in these disclosures included: host agency, security classification, geographic coverage, subject category and means of access, as well as descriptive narrative about the file itself. A major result of this effort has been in the compilation of this information, contained in Attachment A.

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v. CONCLUSIONS

A. Requirement for Automated Information Exchange

The general conclusion regarding the exchange of information online is that a requirement presently exists and the requirement will significantly increase in the future. This conclusion is supported by a number of observations.

- 1. There is an increasing dissatisfaction within the community with manual files generally. There is a correspondingly growing awareness within agencies of the existence of files on-line in other agencies for which access would be desirable and beneficial.
- 2. There are large bodies of information presently collected which can only be disseminated most efficiently by electrical means. Special processing centers are increasingly maintaining such information on-line, and the prognosis is for rapid expansion. Examples are air movements, naval movements, photography readouts, etc.
- 3. When one agency maintains information on-line, the most, and in some instances the only efficient means of access, is on-line. For example, the entire air movements base was put on-line by NSA under USIB direction.
- 4. The user agencies in the Washington area are expending resources to participate in the COINS experiment and additional organizations both inside and outside of the Washington area have expressed a requirement to participate.
- 5. The user agencies represented on this Review Group have expressed high interest in on-line access to a total of 54 existing files of which 12 are presently available through COINS. There was a variable degree of interest among the agencies in particular files.
- 6. Available data show that more than one third* of the COINS interrogations represent one organization interrogating the files of another.

^{*} The exact percentage cannot be determined at this time due to statistical inadequacies. The DIAOLS system files may be accessed from terminals in either a batch mode or interactively, at the option of the interrogator. Interrogations through the network switch may only access the files in a batch mode. DIA does not consider interactive access as part of the COINS system and has not provided a means to count such interrogations. Therefore, the percentage quoted above refers only to interrogations in the batch mode.

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B. COINS Effectiveness

COINS has demonstrated that on-line data base exchange among community users is feasible and achievable. This conclusion is supported by the following observations:

- 1. COINS now provides operational support to community users and has a potential for even greater operational utility, provided present limitations are overcome. Additionally, it has developed experience for the community in dealing with such problems as:
 - a. Netting together of diverse computer systems.
 - b. Management of diverse networks.
 - Security
 - d. Data standards
 - e. Retrieval languages
 - f. User education and support
- 2. An organizational structure providing the mechanism for the handling of present and future problems of interagency exchange has been evolved.
- 3. There is general satisfaction with the ability of COINS to provide timely responses to interrogations. Median response time of less than 20 minutes, with an average response time of less than one hour is now the rule. This is considered timely for batch mode interrogations.
- 4. Analysts have been provided a manipulative capability which has helped to enhance their effectiveness, and has resulted in an overall manpower savings.
- 5. A number of daily electrical end product reports have been replaced by on-line COINS access tailored to consumer requirements; at the same time relieving a burden on communication facilities.

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6. The above benefits have been achieved at a minimal cost
through the use of existing hardware and software. Very little of
the FY 73 operating cost is unique to COINS
the ratio operating cost is dissipated to the cost is dissipated to th
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C. COINS Weaknesses

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The study has revealed notable shortcomings in the present COINS approach to information exchange. Some of these are management-oriented, and others purely technical.

- 1. The assignment of a single agency as the executive agency for the COINS experiment has not provided sufficient management in authority to deal effectively with relevant problems of conflict between agencies regarding roles and missions with regard to intelligence collection, processing, dissemination and production.
- 2. Security and compartmentation is a critical issue. Significant information is now excluded because of security restrictions. Without a solution to this problem, COINS or any other general information exchange network will be of limited value. Solutions to this problem have been proposed and the Computer Security Subcommittee has them under advisement.
- 3. The community is not satisfied with the selection of files available through COINS. In this connection it must be stressed, however, that the decision to place any file on COINS rests wholly with the sponsoring agency. Efforts being made to change COINS files at present must deal on a relatively low priority basis with other agency problems. In the last analysis, COINS is only as good as the files which may be accessed through it.
- 4. File maintenance and updating needs improvement. Agencies have maintained only those files which are of internal operational value, and have also resisted external pressures to alter data formats and query systems, or to include more detailed data than they themselves need.
- 5. Education, documentation, and training of users and potential users are problems of continuing concern because of the changes in the user population, the addition or modification of files, and changes in service.

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- 6. The present COINS configuration limits its capability for expansion to satisfy future interagency access requirements.
- a. The system is not interactive, which limits its usefulness for certain types of data.
- b. Reliance on the switch is inconvenient. Closure at night, or over week-ends and holidays can prevent access to certain needed files. Switch failure can also be critical.

VI. RECOMMENDATIONS

Based on the results of this study, the Review Group recommends the following:

- 1. The DCI direct that an aggressive program of automated information exchange be undertaken.
- 2. To implement the above, a majority of the Review Group proposes that the ASD (I) be appointed the COINS executive agent under the auspices of the DCI with the COINS Project Management Office (PMO) made responsible to the executive agency.
- 3. COINS funding be continued, subject to stipulations included below.
- 4. The USIB Security Committee and its Computer Security Subcommittee address the multi-level security problem with an eye toward immediate interim solution. This Review Group suggests that pending the attainment of a true multi-level security capability, the most practical course of action is:
 - a. to upgrade the entire COINS system to TK;
- b. to handle GAMMA and other compartmented data on a case-by-case basis with dedicated lines and terminals;
- c. to handle extremely time-sensitive event data on a case-by-case basis with dedicated lines and terminals.
- 5. The COINS data base be purged of files for which little or no interest has been demonstrated, and other available non-COINS machine files for which interest has been expressed should be included in COINS as quickly as possible. A complete listing of file suggestions, including additions, modifications, and new files to be added is included as Attachment B.
- 6. 'Present COINS reporting procedures be modified to allow the collection of statistics more amenable to permitting evaluation of system usage, timeliness, and effectiveness. The COINS project manager should be directed to submit a plan for statistical reporting

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VI-2

which would (a) identify the objectives of such reporting (i.e. what must be learned about the system), (b) the items of data to be collected to satisfy the objectives, and (c) the analysis to be performed on the data to provide the desired information.

- 7. The COINS Project Manager and each participating organization take appropriate steps to accelerate and expand the program to train, inform, and motivate both users and potential users.
- 8. The COINS PMO submit a detailed plan for an upgraded system which will address the weaknesses noted in Section V in a cost-effective manner. Specifically to be addressed are means to eliminate the switch, provide interactive capability to all users, and the inclusion of world-wide user hosts and participants.

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ATTACHMENT A - STUDY RESULTS

This attachment provides a summary of the information gathered during the course of the study. No attempt is made here to interpret these results or to draw conclusions from them.

The results presented cover two general topics:

- A. System Descriptions current system and alternatives, including advantages, disadvantages, limitations, and costs.
- B. Files summary of the data on Washington area files, including COINS and non-COINS files, with comments regarding use and interest.
 - A. System Descriptions

It should be noted that there is some disagreement, even at this date, as to a proper definition of the COINS system. The disagreement stems mainly from the fact that COINS was implemented using existing hardware, software, and communications facilities. In fact, most of the hardware, software, and the files were already available for users prior to the existence of COINS (i.e., some degree of dissemination of file data, on a direct terminal access basis, was occurring, and this

The advantages of the configuration of Fig A-l are:

dissemination mode was absorbed into COINS).

a. The system is operational and provides modest operational support.

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- b. Sizable fixed cost investment, particularly in software, and procedures continue to be capitalized.
 - c. Analysts have been given initial training of the system.
- d. Systems analysts and technical personnel are thoroughly familiar with the system and operational performance is still improving.

The disadvantages of the configuration are:

- a. Technology used in implementing the present COINS is, in some cases, obsolete.
 - b. Two query languages must be learned to use all files.
 - c. Only formatted files may be handled.
- d. Operates at a single security level (TS/SI) and as a result, not all information is available to users.

The configuration limits the potential of interagency exchange, since:

a. Massive files all source textual file at CIA, cannot be accommodated should such on-line access be required.

b. Interactive and time-sharing operations are not possible.

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Present procedures for recording or reporting management information do not readily lend themselves toward the pro-rata assignment of costs. In order to derive these costs, it proved necessary to review the program elements relating to COINS, and estimate the percentage of these costs which are attributable to COINS operations.

A summary of the pro-rata and unique cost (FY 73) for all agencies for COINS is contained in the following table. Complete cost breakdowns are contained in Appendix II.

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- 2. <u>Alternative Configurations</u> Four broad categories are considered.
- a. Maintain the present configuration and upgrade the system security level.
- b. Eliminate COINS and satisfy existing and future interagency exchange requirements through bilateral, direct terminal access arrangements.
 - c. Upgrade COINS to eliminate major weaknesses.
- d. Replace COINS with central information storage and retrieval system.

The alternatives and the cost implications are summarized in what follows.

Alternative 1 - Change COINS Security "Umbrella"

There are three subalternatives here: (a) upgrade to TK, (b) upgrade to TK and D/G, and (c) upgrade to complete multilevel security.

(a) Upgrade to TK

Description: The system itself would remain as previously The "umbrella" under which COINS operates would be changed from SI to SI/TK. All terminal areas would be physically secured to meet TK requirements. All personnel having access would be cleared for TK access as well as SI. System control of information would be to the terminal level. Control beyond that would be by conventional procedures.

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Advantages:

- (1) Immediate addition of general interest files from a special processing center would be possible.
- (2) Action to accomplish is totally administrative. Impact on present users would be minimal.

Disadvantages:

- (1) Some present users might require TK clearances even though they do not use TK information, simply to access.
- (2) Non-COINS members (e.g., PACOM, CONARD) now accessing COINS files would be required to secure similarly, or IDHSC and COINS could not share facilities.

Growth Potential: Additional files and users can use the system.

(b) Upgrade to TK and Gamma.

<u>Description</u>: The system itself would remain as above, except that the umbrella under which COINS functions would be changed to include TK and Gamma as well as SI.

Advantages: Generally as indicated above.

<u>Disadvantages</u>: The potential users probably constitute a relatively small group yet all users would require clearance, even though they do not use Gamma.

Costs:

(1) In order to raise the security level of COINS to TK and Gamma it would be necessary to upgrade all terminal facilities to that level.

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lies behind such compartmentation. Effectively, Gamma would be eliminated as a compartment.	
(c) Upgrade to a multi-level security system	
Description: A data system in which hardware and software can protect and segregate information of various security levels to a	
degree of reliability required by security regulations. Operationally,	
the system would provide data only to the level of "clearance" of the	
terminal and/or user.	
Advantages: The system would be available for use universally	/ ,
without security compromise.	
Disadvantages: The research and development for such a	
system would require a number of years, variously estimated at three	
to seven, depending upon resource level invested.	•
Limitations: No improvement in the present situation would	
be available for some time.	
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Alternative 2 - Eliminate COINS

Under this alternative, it is possible to envisage at least two basic sub-alternatives. The first would encompass not only the abolishment of COINS but the cessation of all on-line exchange of information hitherto exchanges through COINS and a return to off-line methods (e.g., hard-copy exchange, electrical dissemination of summary types reports or indirect access to data bases via "opscom" links). This first sub-alternative presupposes a prior community judgment that there does not exist any credible community requirement for on-line interagency file access. The second sub-alternative would involve the substitution, for the present COINS, of a series of bilateral interagency terminal links characterized, for purposes of convenience, a terminal swap. This second alternative clearly presupposes a need for some continued on-line interagency file access of a type and magnitude at least as great as that which COINS now accommodates.

	Option A - Abolish COINS/Revert to Off-Line Only Exchange			
	Advantages			
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Disadvantages

By contrast with very small, cost savings that might be gained from abolishing COINS and ceasing further on-line exchange of information within the Community, the disadvantages associated with such a course are considerable.

- 1. The loss of a substantial body of experience in the on-line exchange of data and the loss of an asset of proven worth for accomplishing such exchange.
- 2. A retrograde resubstitution of inherently less efficient methods of information exchange, especially with respect to those bodies of intelligence which, in terms of their volume and character (discrete elements of formattable data), most readily lend themselves to exchange in digital automated form and which, in terms of time sensitivity, are most effectively provided through on-line systems. Air movements are, in this respect, only the most conspicuous examples to date of this genre of information.
- 3. The loss, for the indefinite future, of the only instrumentality available to whole community for further experimentation with file access on a community as distinct from a purely agency-to-agency basis.

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Option B - Eliminate COINS. Exchange information through direct terminal/system connections.

<u>Definition</u>: Diagrams for this alternative are shown in Figure A-2. Communication links, terminals, and crypto equipment are shown in the diagram. The numbers of terminals, lines and other equipment are estimated from information supplied by each of the agencies.

Operating Procedures and Assumptions:

- (1) A system which services only present COINS files is required.
- (2) Each agency would make bilateral agreements with another agency to share data. Generally, the agency would provide a compatible terminal, a communications line and the suitable crypto gear, (2 units) necessary to interface with the host system as if it were an internal station. There would be little interaction with the community as a whole. The agency interfacing with the host computer would be required to follow the same operating procedures as any other station connected to that system.

- (4) The capabilities provided at the terminals will be constrained by the capabilities of the host system and any other agreements reached by the two agencies.
- (5) Funding for this approach would be provided out of each of the agencies' operating budgets.
- (6) Security procedures would be worked out between the two participating agencies.
- (7) Couriers would deliver long listings in order to conserve system resources.

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Advantages

- (1) A relatively simple communications system.
- (2) Eases interagency liaison problems.
- (3) Reduces community investment in developing file processors.
- (4) Provides direct access to the desired system.
- (5) Provides a better means of coping with the multi-level security problem.
- (6) Provides a basis for resource sharing if interagency arrangements are satisfactory.

Disadvantages:

- (1) Provides no impetus towards commonality (data standards, languages, etc.)
- (2) Although initial costs are low, they grow geometrically with the addition of new agencies processors.
 - (3) Investment in working software is lost.
 - (4) Mix of files may dictate major changes in cost.
 - (5) Unable to take advantage of remote terminals already in place.

- (6) Does not anticipate legitimate needs for computer-to-computer communications.
- (7) Does not provide a positive atmosphere for interagency sharing of information.

As The second Limitations/Growth Potential: The consequence of the second secon

This approach to providing access to agencies' files is severely limited in its growth potential. The addition of new systems or agencies into the community of users would cause system costs to expand rapidly.

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Alternative 3 - Upgrade COINS to eliminate major weaknesses.

There are several concepts which may be proposed that offer maximum utilization of existing COINS hardware and software, while at the same time significantly upgrading the COINS system. The concepts may be differentiated on the basis of whether they present near-or farterm configurations, and the extent to which they require additional hardware and software development. The one presented in this section utilizes a concept developed by ARPA. Another proposal is found in Appendix III.

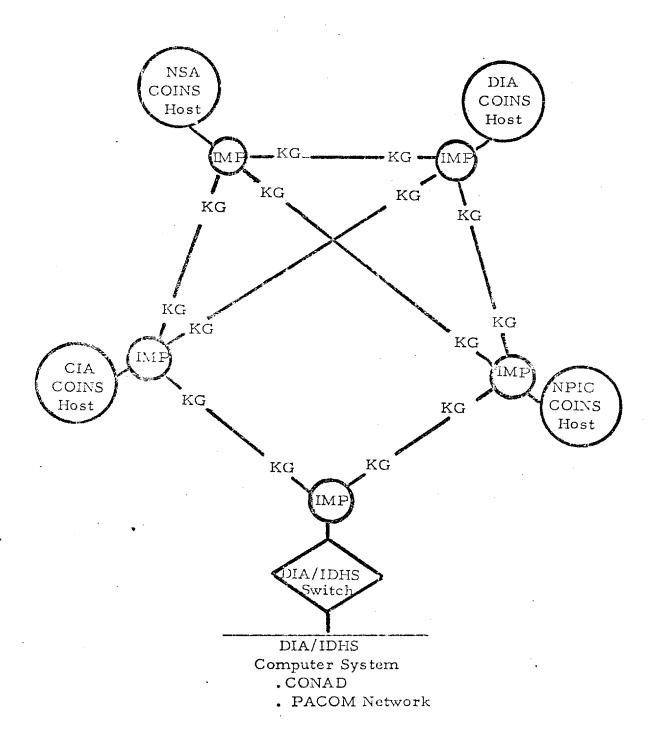
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Advantages:

- (1) Each participating agency maintains absolute and full autonomy.
 - (2) The COINS Switch is eliminated.
- (3) All current hardware and software (with exception of Switch support) is useable.

- (5) Does not require highly sophisticated or complicated cryptoequipment (no multi-variable storage and control).
 - (6) Little impact on current network operation.
- (7) Provides relative easy key variable changes on a circuitby-circuit basis with essentially no system "downtime."
- (8) Where deemed necessary each end of the line (Host/IMP cable) between the Host computer and secure IMP could have crypto-units. Thus, the message content would be secured on a Host-to-Host basis while the header of the message would be secured on an IMP-TO-IMP bass.

COINS II PHASE I DISTRIBUTED NETWORK (Utilizing ARPA Concept)



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	(6) Modification of the Host's executive software (again, cost depends upon the particular Host; typically, 4 to 12 man-months of system programming required).						
1							
	Recurring Costs						
	Alternative 4 - Central Community Information Storage and Retrieval System						
	Definition: A diagram of the network is shown in Figure A-4. The informatics, Inc., study of 1970 set forth an estimate of 50 terminals (initially) growing to 200 over a period of 5 years. Estimates are based on 200 terminals located in five agencies.						

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Operating Procedures and Assumptions:

- (1) One agency (independent or participant) would be designated to install, manage, maintain, and operate the Central Community Information Storage and Retrieval (CCIS&R) System.
 - (2) The CCIS&R System will provide the following capabilities:

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- (a) Remote batch (query and maintenance).
 - (b) On-line, interactive query capability.
 - (c) On-line, maintenance.

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(8) Training courses will be set up to inform and indoctrinate users.

Advantages:

- (1) A common retrieval language; a common file maintenance language.
 - (2) Data standards are mandatory.
- (3) Common communication and communications security equipment.
 - (4) A new user could join the system at little cost.
 - (5) A relatively simple communications system.
 - (6) Eases interagency liaison problems.
- (7) Reduces community investment in developing several file processors.

Disadvantages:

- (1) Does not anticipate or allow for legitimate needs for computer-to-computer communications.
 - (2) May be at odds with DIA-IDHS plans.
 - (3) One agency imposes many technical decisions on others.
 - (4) Service under crisis conditions may not be acceptable.
- (5) Size and design of system would probably render it very difficult--technically and politically-to change.
- (6) Services of common concern have (historically) received their budgets through line office planning rather than through the relatively unwieldy actions of USIB/IRAC committees.
 - (7) Enforcement of file maintenance may be impossible, i.e., value of files may deteriorate.

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- (8) Establishment of an agency's file at the central facility would probably not eliminate the need to also keep the file locally. Therefore, in the worst case, every file on the central computer would have its counterpart on some other computer system--with all that implies.
- (9) Specifications for the software system might be extremely difficult to establish since the system would have to satisfy all user requirements. Alternatively, it would be necessary to compromise, and the result would be disaffection and dissatisfaction on the part of many users.

Limitations/Growth Potential: If the software system for a central complex is properly designed, growth--presumedly to accommodate more users--is simply a matter of adding hardware, storage devices, and retrofitting the executive program. There is nothing to prevent (i.e., the state-of-the-art permits) this central complex from becoming a node of a larger network.

Estimated Cost of A Central Community Information Storage

 and Retrieval System:						
 (Assumes 5 year design and development schedule)						

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B. Files

For the purpose of providing a consistent set of ground rules for the analysis of file data, the following definitions were established:

- (1) Files All pertinent Washington area automated files, whether or not presently part of COINS and whether or not presently accessible on line. The files considered are contained in Tables C-1 and C-2, and NC-1 through NC-6. A list of those files not considered is also provided (Tables F-1, 2 and 3).
- (2) Community Use Defined as present on line usage by one or more agencies, other than the file host. For non-COINS files, off-line dissemination is therefore classified as no community use. For those non-COINS files where some present on-line usage has been noted, the stated degree of this use (low, moderate, or high) represents an educated guess on the part of the file host. The degree of use of the present COINS files comes from data provided by the COINS program manager.
- (3) Community Interest The present levels of available information is insufficient to permit accurate definition of interagency requirements for on-line exchange on a file-by-file basis. Accordingly, for this review each user agency expressed an opinion as to the degree of agency interest in on-line access to each file. This expression of interest is intended to serve as a point-of-departure for an eventual definitive statement of need.

(5) Redundancy - The positive identification of redundant or overlapping files will require a detailed analysis of all file data elements. This attachment identifies and flags those files which give outward appearances of containing information possibly redundant with that of other files. These files are shown in Tables R-1 and R-2.

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(6) Priority - To attempt some correlation between use, interest and importance of community access to a particular file, the range of priorities for information contained in each file from the applicable geographic area was taken from the intelligence objectives and priorities as stated in DCID 1/2 and JSOF FY 75-82, Annex A. An asterisk is used to indicate a special category, where the file coverage crosses many intelligence objectives and many geographical areas, and a single priority cannot be determined.

The notation for community use and interest is:

N: None

L: Low

M: Moderate

II: High

?: Unknown or unable to determine

The expressions of interest represent estimates, as discussed previously. For files which are presently accessed through COINS, statistical data are available regarding file use. These numerical data have been converted to the above format by dividing the October 1972 use counts into quartiles.

The notation for priority ratings is:

1-8: High through Low DCID/JSOP ratings.

--: None stated (no priority)

*: Special (see paragraph 6)

?: Unknown or unable to determine

Use, Interest and Priority selections for the table have been chosen as the highest of the range presented by the different agencies.

With regard to the file redundancy indications of Tables R-1 and R-2, two of the areas in the table were selected for further examination in greater detail - Ground Forces files and Installations files. The evaluation was performed by the file sponsors on the basis of a review of the following data on each file:



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Review of the installations files led to the following notes: 1. Unwarranted duplication among location/installation files	
within the community was found to be slight. While geographic areas of interest overlap (4 out of 5 files are worldwide), the files are significantly different based on purpose and use, structure, and classification level. The periods of coverage can be segregated by	
those files (or portions) that date back to the 1940's, and those whose date level begins in 1968 or 1969. A file update trend shows the movement toward daily or as required after an event or mission.	
novement toward daily of as required after an event of inteston.	

It is felt that the location/installation file differences outweigh the similarities; therefore, a data element by element comparison is not recommended.

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APPENDIX I

DETAILED TERMS OF REFERENCE

GENTULNIAL

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FOR STUDY ON AUTOMATED INFORMATION EXCHANGE AMONG INTELLIGENCE AGENCIES IN THE WASHINGTON AREA

Objectives:

- 1. To review and evaluate, by 1 February 1973, the COINS system, determining its effectiveness in meeting the present and anticipated requirements of the user community.
- 2. To identify those areas where the effectiveness of COINS in improving the intelligence product may be enhanced.
- 3. To recommend courses of action and consider their impact on present and future budget allocations.
- Phase 1. Collect, identify and catalog the present and anticipated automated files of each agency.
 - a. Describe the general nature and content of each file with reference to:
 - (1) Countries covered
 - (2) Data elements
 - (3) Security levels
 - b. Determine which of the files are presently part of COINS.

To be completed by the meeting of 22 November 1972.

Phase 2. Identify those files that are required by users in more than one agency. Catalog which of the required files are presently part of COINS, and evaluate the ability of COINS to satisfy user requirements through access to available files. Identify new files that might be of value in meeting common user requirements. Determine the extent and importance of the use on a file-by-file basis of inter-agency access to an agency's files.

To be completed by the meeting of 7 December 1972.

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Phase 3. Determine the effectiveness of COINS in satisfying the requirements of the user community by examining the utilization of the present prototype system. Identify the utilization problem areas through studies of:

- a. Frequencies of queries by file and by user.
- b. Adequacy of responses to queries.
- c. Utility of responses in format and timeliness.
- d. Ultimate disposition of responses.
- e. Multi-level security.

To be completed by the meeting of 28 December 1972.

Phase 4. Determine the usefulness of the COINS approach in satisfying multi-agency information exchange requirements and identify the costs in both manpower and hardware resources currently committed to COINS. Recommend improvements or alternatives which appear beneficial from the points of view of

- a. Satisfaction of user requirements.
- b. Enhancement of multi-agency exchange capabilities.
- c. Cost savings.

To be completed for review by the meeting of 18 January 1973. Final report to be presented 1 February 1973.

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APPENDIX II

COINS COSTS

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APPENDIX III

COINS II PROPOSAL

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APPENDIX III COINS II

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- 1. respond to crisis or time sensitive situations.
- 2. correlate and analyze information from a number of different sources in a timely fashion.
- B. This situation is made even more acute today by the fact that each agency must strive for self sufficiency by building and maintaining its own intelligence information files and computer based information systems. Little, or no consideration is given to the information requirements and systems of other agencies, or a need to interface information systems with those of other agencies. Further delay in operational implementation of an interagency system may render creation of a future facility of this nature extremely difficult, if not impossible, because of increasing costs and unilateral agency system commitments.

II. FACTS BEARING ON THE PROBLEM

PROBLEM

- A. The COINS Experiment has proven the feasibility and utility of information exchange by means of an interagency computer network.
- B. It is not operationally practical to centrally store all data bases of common community concern in one agency or one computer complex.
- C. Some of the information files of common community concern should be maintained in machineable form and made available to other intelligence agencies in an on-line fashion. The question to be answered is, "What information files need to be accessed on-line?"

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- D. The information files of some agencies are not available to other agencies on an around-the-clock basis (i.e., during weekends, nights and holidays). This is of particular importance during periods of immediate operational need. Procedures do exist for an agency to request another agency to provide certain information, however responding to some requests is often slow and time consuming.
- E. The EDP and telecommunications technology is available today to permit significant improvements in the mass storage and in the secure on-line retrieval and distribution of intelligence information.

III. DISCUSSION

- A. The EDP technology used in the present COINS network is primitive (if not obsolete) compared with the technology available today. Perpetuating the present network with no firm plans to upgrade or replace the present network in the near future is neither a realistic nor a practical position for the community to take.
- B. The present experimental CONS network has proven the fact that there are certain types of information files to which the analysts require on-line access, or, at least, they appear to prefer on-line access.
- C. It is impractical to store in a single, central computer complex all of the machineable information files which need to be shared in the community. Serious consideration should be given to integrating the following existing large-scale information systems into a follow-on COINS type network.

AGENCY NSA	*TIPS SOLIS	COMPUTER UNIVAC 494 B6700
y iku majadik		UNIVAC 494
*DIA	DIAOLS	HIS 635
NAVY	OSIS	CDC 6600
STATE	STATE CABLES	IBM 370/155

* Now netted together in COINS, however, TK data bases in NPIC are not now available in COINS. Other systems presently on COINS that could eventually open up files are sponsored by PACOM and CONAD.

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SAC	PACER	HIS 6080
CIA	AEGIS	IBM 370/155 R
*NPIC	IIS	UNIVAC 494

- D. The U.S. intelligence community must gradually replace the present COINS network over the next five years with one which:
- 1. Eliminates reliance on the single non-redundant store and forward switch at DIA which is batch oriented (i.e., transactions handled individually and independently).
- 2. Provide users with a common information retrieval language capable of handling:
 - a. interactive and batch interrogations
 - b. formatted and non-formatted (freeflow) files.
- 3. Nets computer systems together which are primarily intended to promote the interagency sharing of files and programs.
- 4. Provides a capability to simultaneously handle information from multiple security compartments and to control need-to-know.

IV. PROPOSAL

- A. Assumptions: The proposed concept of operations is based on several fundamental assumptions:
 - 1. There is a valid, implicit community requirement:
- a. to build, maintain and share machineable information files of common concern on a variety of selected subjects.
 - b. for a secure network of digital computers to permit on-line access to these files around-the-clock.
 - 2. The technology to implement such a network is available.
 - 3. The economic and operational benefits to be derived from sharing data bases and an information system would more than offset the costs required to implement this proposal.

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4. Each participating agency would determine its own level of participation.

B. COINS Follow-On:

- 1. Design a follow-on COINS network making maximum use of existing and available technology. The network would be dedicated to the on-line sharing of formatted and non-formatted machineable data bases within the U.S. Intelligence Community. This network would be designed to permit an authorized user operating from a remote terminal located anywhere in the world to work in a secure fashion with:
- a. Any computer in his own installation to which he is authorized access, including the file processor in which COINS information files are resident, or
- b. Any file processor in the network to which he is authorized access and which handles COINS information files.
 - 2. The follow-on COINS network would be composed of:
- a. A secure digital communications network (i.e., TETRA-HEDRON) which would be used to link together a number of "secure digital exchanges" (the latter would be analogous to the present secure telephone exchange for the transmission of analog signals).
- b. A number of common "secure digital exchanges" would be established at each agency to handle the secure communications between the remote terminals of that agency and (1) internal remote access sytems, and (2) remote access systems available at other nodes in the network. Eventually, each secure digital exchange would be equipped with a new COMSEC device now being developed by NSA which will authenticate that a user operating at a specific terminal is authorized to work with a specific computer system. If properly authenticated it would provide the security required for them to interact. The secure digital exchange and related COMSEC equipment should be developed as part of the overall secure digital communications package. Then each agency would need only adopt the technical standards for interfacing terminals and computers to the exchange.
- c. Common, dedicated file processors and data base management systems at each node in the network to handle the processing of the board of information files of common concern.

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- 3. Security safeguards would be a major criteria in the technical design of the follow-on COINS type network. The objective of these safeguards would be to simultaneously handle information from multi-security compartments and to control need-to-know within and between security compartments.
- 4. Considerable effort has already been put forth by the COINS Project Management Office on the development of a technical plan for the follow-on COINS and this effort is continuing.
- C. Advantages: There are some substantial economic and operational advantages to be gained from adopting this proposal.
- 1. Exonomic Advantages Expected: Valuable resources (i.c., personnel, material and computer time) would be saved through the elimination or reduction of unnecessary duplication. This concept would:
- a. Prevent new, additional machineable information files from being independently established in the future.
- b. Reduce the number of similar or duplicate machineable information files which are currently being maintained.
- c. Reduce the number of machineable information files being exchanged off-line for further processing in other computer systems (note: If current, complete and accurate information is available on-line around the clock, some of these off-line exchanges would not be necessary.)
- d. Free some of the computer capacity now being used to process similar or duplicate files. It may even negate the need for a computer system at certain sites.
 - e. Reduce the man hours needed for integrating and maintaining the network through the use of common computer systems and remote terminals.
- 2. Operational Advantages Expected: Timely, complete and accurate information would be available to all agencies whenever required for responding to customer requirements. This would be even more important than the savings in resources, because the products of the intelligence community directly affect the military, political and diplomatic posture of this nation. Specifically, these concepts would:

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- a. provide an authoritative single source of information on some selected key subjects, with a reduction in the number of multiple, possibly contradictory, sources to be consulted:
- b. increase selectivity and flexibility of information retrieval beyond the feasibility of manual methods (e.g., manual searching of a file for specific word endings is impractical);
 - c. improve the timeliness of responses delivered to users;
- d. result in files being designed to satisfy the information requirements of all agencies, and the availability of these files even to agencies with only an occasional, but critical, requirement;
- e. minimize duplicative analysis, continuing separate analytic efforts only when necessary to eliminate conflicts in interpretation of intelligence information; and
- f. identify missing items of information from a data base, which might result in an intensified collection effort.

V. RECOMMENDED ACTIONS: The DCI should:

- A. Request the COINS Project Management Office at NSA, working in cooperation with the technicians from other interested agencies, to prepare a technical design plan for a follow-on COINS network.
- B. Establish a committee under USIB to identify the information files and services to be handled within the follow-on COINS network.

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THE DIRECTOR OF CENTRAL INTELLIGENCE

WASHINGTON, D.C. 20505

16 April 1973

MEMORANDUM FOR

Intelligence Resources Advisory Committee

SUBJECT: COINS, IRAC Working Group Report

The attached copy of the subject report is for your information. I have decided to accept the recommendations of the report along the lines indicated in the attached letter to the ASD(I).

James R. Schlesinger

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Attachments (2)

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9 April 1973

The Honorable Albert C. Hall Assistant Secretary of Defense (Intelligence) Room 3E 282 The Pentagon

Dear Al:

This responds to your letter of February 20, 1973 concerning COINS and forwarding a copy of a study report undertaken in behalf of IRAC, and also to your letter of March 29, 1973. The report appears to be comprehensive, workmanlike and objective. I understand there was some dissent on the subject of interactive capabilities for the system.

Subject to certain assurances, the DCI is prepared to accept the recommendations of the report. In particular,

- 1. The ASD(I) is requested to take the responsibility as executive agent for the COINS experiment under the auspices of the DCI.
- 2. The COINS Project Office, which will remain at NSA, is placed under the executive agent. Staffing of the Office may be community-wide subject to agreement between our Offices.
- 3. The COINS project and funding be continued with the expectation that:
- a. The present system be upgraded to the TK level with a target date of May 1, 1973. I am sending a separate letter to Agency Directors informing them of this action.
- b. COINS be purged of unused files and these files replaced by the files of interest to the community, as identified in the study.

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	•	c. COI	NS managem	ent	reporting	be	strengthened	to	allow
evaluation	of	usage,	timeliness,	and	effective	ne s	8.		

d. The COINS PMD submit a detailed plan for an upgraded system which will address the weaknesses previously identified in a cost-effective manner.

Your proposed terms of reference for a working group are satisfactory. will be my representative at the April 10 meeting.

If there are any questions on this I would be happy to discuss them with you.

Sincerely,

/s/

Lew Allen, Jr. Major General, USAF

JJMartin/mjn/3 Apr 73 Retyped to add para/drm/9 Apr 73 Distribution:

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